JOURNAL OF AGRICULTURAL RESEARCH

VOL. 76 WASHINGTON, D. C., JANUARY 1–JUNE 15, 1948

CONTENTS

Page

Apple-Tree Response to Nitrogen Applied at Different Seasons. Illus. J. R. MAGNESS, L. P. BATJER, and L. O. REGEIMBAL 1
Inheritance of Resistance to Bacterial Wilt in Tobacco. Illus. T. E. SMITH and E. E. CLAYTON 27
The Prescott Scale (*Matsucoccus vexillorum*) and Associated Organisms That Cause Flagging Injury to Ponderosa Pine in the Southwest. Illus. HOWARD L. MCKENZIE, L. S. GILL, and DON E. ELLIS 33
Inheritance of Weight per Unit Length of Culm and Other Characters in Kanred × Coppei Wheat. Illus. I. M. ATKINS 53
Digestible Nutrients and Metabolizable Energy in Russian-Thistle Hays and Silages. F. W. CHRISTENSEN, T. H. HOPPER, and O. A. STEVENS 73
Recovery and Viability of Seeds of Certain Southern Grasses and Lespedeza Passed through the Bovine Digestive Tract. GLENN W. BURTON and JOHN S. ANDREWS 95
Yield, Composition, and Other Latex Characteristics of *Cryptostegia grandiflora*. W. S. STEWART, J. BONNER, and R. W. HUMMER 105
Susceptibility of Guayule to Verticillium Wilt and Influence of Soil Temperature and Moisture on Development of Infection. Illus. HENRY SCHNEIDER 129
Sucrose, Dextrose, and Levulose Content of Some Domestic Varieties of Sorgo at Different Stages of Maturity. EMIL K. VENTRE, S. BYALL, and J. L. CATLETT 145
Reproduction and Mortality of California Red Scales Resistant and Nonresistant to Hydrocyanic Acid Gas, as Affected by Temperature. Illus. FRANCIS MUNGER 153
The Production of Alate Forms of *Myzus persicae* on *Brassica campestris* in the Greenhouse. Illus. W. A. SHANDS and G. W. SIMPSON 165
The Association of *Hylurgopinus rufipes* with the Dutch Elm Disease Pathogen. K. G. PARKER, LYLE E. HAGMANN, DONALD L. COLLINS, L. J. TYLER, HENRY DIETRICH, and W. E. OZARD 175
A Study of Meiosis in the Microsporocytes of Interspecific Hybrids of *Solanum demissum* × *Solanum tuberosum* Carried through Four Backcrosses. Illus. LEONA O. SCHNELL 185
Composition of Shark Meal. SIDNEY P. MARSHALL and GEORGE K. DAVIS 213
Transfer of the Mosaic-Resistance Factor between H Chromosomes of *Nicotiana glutinosa* and *N. tabacum*. G. U. GERSTEL 219
Segregation in Russeted Sports of the Grimes Apple. Illus. V. R. GARDNER, W. TOENJES and M. GIEFEL 225
Variability and Segregation in the Golden Russet Apple. Illus. V. R. GARDNER, W. TOENJES, M. GIEFEL, and J. C. KREMER 231
Segregation in a Radially Unsymmetrical Sport of the Canada Red Apple. Illus. V. R. GARDNER, W. TOENJES, and M. GIEFEL 241
Contribution of Inbred Lines to the Resistance of Hybrid Dent Corn to Larvae of the Early Summer Generation of the European Corn Borer. Illus. L. H. PATCH and RAY T. EVERLY 257
The Significance of Available Calcium as a Factor Limiting Growth of *Azotobacter* at pH Levels below 6.0. P. L. Gainey 265
Effect of Different Varieties and Ages of Sorghum on the Biology of the Chinch Bug. Illus. R. G. DAHMS 271
Effect of Nitrogen, Phosphorus, and Potassium on Susceptibility of Tomatoes to *Alternaria solani*. Illus. H. REX THOMAS 289
Reaction of Alfalfa Varieties, Selections, and Hybrids to *Ascochyta imperfecta*. Illus. L. P. REITZ, C. O. GRANDFIELD, M. L. PETERSON, G. V. GOODDING, M. A. ARNESON, and E. D. HANSING 307

ERRATA AND AUTHOR'S EMENDATIONS

Page 234, second line from bottom, "furits" should be "fruits".
Page 239, paragraph 4, line 9, "pelargonium" should be "Pelargonium".
Page 255, line 2, "through" should be "though" and "bizzarria" should be "Bizzarria".
Page 258, line 6, "crosses" should be "crossed".
Page 322, paragraph 2, line 10, "favors" should be "factors".

INDEX

Page

Alfalfa—
black stem—
infection of varieties, selections, and hybrids 307–323
symptoms 307
inheritance of susceptibility to black stem 307–323
varieties, selections, and hybrids, reaction to *Ascochyta imperfecta*. L. P. Reitz, C. O. Grandfield, M. L. Peterson, G. V. Goodding, M. A. Arneson, and E. D. Hansing 307–323
Alternaria solani, susceptibility of tomatoes to, effect of nitrogen, phosphorous, and potassium. H. Rex Thomas 289–306
ANDREWS, JOHN S., and BURTON, GLENN W.: Recovery and Viability of Seeds of Certain Southern Grasses and Lespedeza Passed through the Bovine Digestive Tract 95–103
Aonidiella aurantii. *See* Scale, California red.
Apple—
Canada Red, radially unsymmetrical sport, segregation. V. R. Gardner, W. Toenjes, and M. Giefel 241–255
Golden Russet, variability and segregation. V. R. Gardner, W. Toenjes, M. Giefel, and J. C. Kremer 231–240
Grimes, russeted sports, segregation. V. R. Gardner, W. Toenjes, and M. Giefel 225–229
orchard soil, nitrate-nitrogen content 4–11
tree—
foliage, nitrogen content at different seasons—
relation to fruit color 19–22, 23
relation to tree growth 19, 23
parts, nitrogen content at different seasons 11–18, 22–24
response to nitrogen fertilizer, rate at different seasons 19, 22–24
trees—
fruit set, effect of nitrogen application at different seasons 18
response to nitrogen applied at different seasons. J. R. Magness, L. P. Batjer, and L. O. Regeimbal 1–25
yield, effect of nitrogen application at different seasons 18
Apples—
bud sports, study 225–255
color, effect of nitrogen at different seasons 18–19, 23
russeting—
effect of seasonal conditions 234
relation to tree, branch, and spur differences 234–235
variations 226–229
variations, propagation trials 235–239
ARNESON, M. A., REITZ, L. P., GRANDFIELD, C. O., PETERSON, M. L., GOODDING, G. V., and HANSING, E. D.: Reaction of Alfalfa Varieties, Selections, and Hybrids to *Ascochyta imperfecta* 307–323
Ascochyta imperfecta—
cause of black stem of alfalfa 307
reaction of alfalfa varieties, selections, and hybrids to. L. P. Reitz, C. O. Grandfield, M. L. Peterson, G. V. Goodding, M. A. Arneson, and E. D. Hansing 307–323
ATKINS, I. M.: Inheritance of Weight per Unit Length of Culm and Other Characters in Kanred×Coppei Wheat 53–72

Page

Azotobacter, growth at pH levels below 6.0, limitation by available calcium. P. L. Gainey 265–270

Bacterium solanacearum, cause of bacterial wilt of tobacco 27
BATJER, L. P., MAGNESS, J. R., and REGEIMBAL, L. O.: Apple-Tree Response to Nitrogen Applied at Different Seasons 1–25
Black stem. *See* Alfalfa black stem.
Blissus leucopterus. *See* Chinch bug.
BONNER, J., STEWART, W. S., and HUMMER, R. W.: Yield, Composition, and Other Latex Characteristics of *Cryptostegia grandiflora* 105–127
Brassica campestris, host of alate forms of *Myzus persicae* in greenhouse. W. A. Shands and G. W. Simpson 165–173
BURTON, GLENN W., and ANDREWS, JOHN S.: Recovery and Viability of Seeds of Certain Southern Grasses and Lespedeza Passed through the Bovine Digestive tract 95–103
BYALL, S., VENTRE, EMIL K., and CATLETT, J. L.: Sucrose, Dextrose, and Levulose Content of Some Domestic Varieties of Sorgo at Different Stages of Maturity 145–151

Calcium, available, significance as factor limiting growth of *Azotobacter* at pH levels below 6.0. P. L. Gainey 265–270
California red scale. *See* Scale, California red.
CATLETT, J. L., VENTRE, EMIL K., and BYALL, S.: Sucrose, Dextrose, and Levulose Content of Some Domestic Varieties of Sorgo at Different Stages of Maturity 145–151
Cenangium sp., injury to pines 48–51
Ceratostomella ulmi—
cause of Dutch elm disease 175
spread by *Hylurgopinus rufipes* 175–182
Chinch bug—
biology, effect of different varieties and ages of sorghum. R. G. Dahms 271–288
preference for different sorghums 279, 280
CHRISTENSEN, F. W., HOPPER, T. H., and STEVENS, O. A.: Digestible Nutrients and Metabolizable Energy in Russian-Thistle Hays and Silages 73–93
Chromosomes, H, of *Nicotiana glutinosa* and *N. tabacum*, transfer of mosaic-resistance factor between. D. U. Gerstel 219–223
CLAYTON, E. E., and SMITH, T. E.: Inheritance of Resistance to Bacterial Wilt in Tobacco 27–32
COLLINS, DONALD L., PARKER, K. G., HAGMANN, LYLE E., TYLER, L. J., DIETRICH, HENRY, and OZARD, W. E.: The Association of *Hylurgopinus rufipes* with the Dutch Elm Disease Pathogen 175–183
Corn—
borer, European, larvae of early summer generation, resistance of hybrid dent corn to, contribution of inbred lines. L. H. Patch and Ray T. Everly 257–263
inbred lines, contribution to resistance of hybrid dent to larvae of early summer generation of European corn borer. L. H. Patch and Ray T. Everly 257–263
Cows, digestive tract, seeds passed through, recovery and viability 96–103

Page

Cryptostegia—
grandiflora—
latex—
composition and factors affecting 117–125
flow and exudation 106–112
obtaining from plant 106
yield and factors affecting 112–117
yield, composition, and other characteristics. W. S. Stewart, J. Bonner, and R. W. Hummer 105–127
plant, description 105–106
rubber formation in vitro, attempts 125
spp., interspecific reciprocal grafts, latex from, composition 123–125

DAHMS, R. G.: Effect of Different Varieties and Ages of Sorghum on the Biology of the Chinch Bug 271–288

DAVIS, GEORGE K., and MARSHALL, SIDNEY P.: Composition of Shark Meal 213–218

Dextrose content, sorgo, domestic varieties at different stages of maturity. Emil K. Ventre, S. Byall, and J. L. Catlett 145–151

DIETRICH, HENRY, PARKER, K. G., HAGMANN, LYLE E., COLLINS, DONALD L., TYLER, L. J., and OZARD, W. E.: The Association of *Hylurgopinus rufipes* with the Dutch Elm Disease Pathogen 175–183

Digestive tract, bovine, seeds passed through, recovery and viability. Glenn W. Burton and John S. Andrews 95–103

Dutch elm disease pathogen, association of *Hylurgopinus rufipes* with. K. G. Parker, Lyle E. Hagmann, Donald L. Collins, L. J. Tyler, Henry Dietrich, and W. E. Ozard 175–183

ELLIS, DON E., MCKENZIE, HOWARD L., and GILL, L. S.: The Prescott Scale (*Matsucoccus vexillorum*) and Associated Organisms That Cause Flagging Injury to Ponderosa Pine in the Southwest 33–51

Elm bark beetle—
European, carrier of Dutch elm disease pathogen 175, 181–182
native. See *Hylurgopinus rufipes*.

Energy, metabolizable, and digestible nutrients in Russian-thistle hays and silages. F. W. Christensen, T. H. Hopper, and O. A. Stevens 73–93

EVERLY, RAY T., and PATCH, L. H.: Contribution of Inbred Lines to the Resistance of Hybrid Dent Corn to Larvae of the Early Summer Generation of the European Corn Borer 257–263

Flagging injury of ponderosa pine, effect of Prescott scale and associated organisms in Southwest. Howard L. McKenzie, L. S. Gill, and Don E. Ellis 33–51

GAINEY, P. L.: The Significance of Available Calcium as a Factor Limiting Growth of *Azotobacter* at pH Levels below 6.0 265–270

GARDNER, V. R., TOENJES, W.:
and GIEFEL, M.: Segregation in a Radially Unsymmetrical Sport of the Canada Red Apple 241–255
and GIEFEL, M.: Segregation in Russeted Sports of the Grimes Apple 225–229
GIEFEL, M., and KREMER, J. C.: Variability and Segregation in the Golden Russet Apple 231–240

GERSTEL, D. U.: Transfer of the Mosaic-Resistance Factor between H Chromosomes of *Nicotiana glutinosa* and *N. tabacum* 219–223

GIEFEL, M., GARDNER, V. R.:
and TOENJES, W.: Segregation in a Radially Unsymmetrical Sport of the Canada Red Apple 241–255
and TOENJES, W.: Segregation in Russetted Sports of the Grimes Apple 225–229
TOENJES, W., and KREMER, J. C.: Variability and Segregation in the Golden Russet Apple 231–240

Page

GILL, L. S., MCKENZIE, HOWARD L., and ELLIS, DON E.: The Prescott Scale (*Matsucoccus vexillorum*) and Associated Organisms That Cause Flagging Injury to Ponderosa Pine in the Southwest 33–51

GOODDING, G. V., REITZ, L. P., GRANDFIELD, C. O., PETERSON, M. L., ARNESON, M. A., and HANSING, E. D.: Reaction of Alfalfa Varieties, Selections, and Hybrids to *Ascochyta imperfecta* 307–323

GRANDFIELD, C. O., REITZ, L. P., PETERSON, M. L., GOODDING, G. V., ARNESON, M. A., and HANSING, E. D.: Reaction of Alfalfa Varieties, Selections, and Hybrids to *Ascochyta imperfecta* 307–323

Grasses, southern, seeds passed through bovine digestive tract, recovery and viability. Glenn W. Burton and John S. Andrews 95–103

Guayule—
commercial strains, susceptibility to verticillium wilt 130–133
susceptibility to verticillium wilt and influence of soil temperature and moisture on development of infection. Henry Schneider 129–143
verticillium wilt—
soil-moisture studies 135–141
soil-temperature studies 134–135

HAGMANN, LYLE E., PARKER, K. G., COLLINS, DONALD L., TYLER, L. J., DIETRICH, HENRY, and OZARD, W. E.: The Association of *Hylurgopinus rufipes* with the Dutch Elm Disease Pathogen 175–183

HANSING, E. D., REITZ, L. P., GRANDFIELD, C. O., PETERSON, M. L., GOODDING, G. V., and ARNESON, M. A.: Reaction of Alfalfa Varieties, Selections, and Hybrids to *Ascochyta imperfecta* 307–323

Hays, Russian-thistle, digestible nutrients and metabolizable energy in. F. W. Christensen, T. H. Hopper, and O. A. Stevens 73–93

HOPPER, T. H., CHRISTENSEN, F. W., and STEVENS, O. A.: Digestible Nutrients and Metabolizable Energy in Russian-Thistle Hays and Silages 73–93

HUMMER, R. W., STEWART, W. S., and BONNER, J.: Yield, Composition, and Other Latex Characteristics of *Cryptostegia grandiflora* 105–127

Hylurgopinus rufipes—
association with Dutch elm disease pathogen. K. G. Parker, Lyle E. Hagmann, Donald L. Collins, L. J. Tyler, Henry Dietrich, and W. E. Ozard 175–183
damage to elms, comparison with *Scolytus multistriatus* 175, 181–182

Inheritance of—
resistance to bacterial wilt in tobacco. T. E. Smith and E. E. Clayton 27–32
susceptibility to black stem in alfalfa varieties, selections, and hybrids 307–323
weight per unit length of culm and other characters in Kanred×Coppei wheat. I. M. Atkins 53–72

KREMER, J. C., GARDNER, V. R., TOENJES, W., and GIEFEL, M.: Variability and Segregation in the Golden Russet Apple 231–240

Latex of *Cryptostegia grandiflora*, yield, composition, and other characteristics. W. S. Stewart, J. Bonner, and R. W. Hummer 105–127

Lespedeza seeds passed through bovine digestive tract, recovery and viability. Glenn W. Burton and John S. Andrews 95–103

Levulose content, sorgo, domestic varieties, at different stages of maturity. Emil K. Ventre, S. Byall, and J. L. Catlett 145–151

Page

MAGNESS, J. R., BATJER, L. P., and REGEIMBAL, L. O.: Apple-Tree Response to Nitrogen Applied at Different Seasons---- 1-25
Malus sylvestris. *See* Apple.
MARSHALL, SIDNEY P., and DAVIS, GEORGE K.: Composition of Shark Meal---- 213-218
Matsucoccus vexillorum and associated organisms causing flagging injury to ponderosa pine in Southwest. Howard L. McKenzie, L. S. Gill, and Don E. Ellis.. 33-51
MCKENZIE, HOWARD L., GILL, L. S., and ELLIS, DON E.: The Prescott Scale (*Matsucoccus vexillorum*) and Associated Organisms That Cause Flagging Injury to Ponderosa Pine in the Southwest---- 33-51
Medicago sativa. *See* Alfalfa.
Meiosis in microsporocytes of interspecific hybrids of *Solanum demissum* × *Solanum tuberosum* carried through four backcrosses, study. Leona O. Schnell---- 185-212
Mosaic-resistance factor in tobacco, transfer between H chromosomes of *Nicotiana glutinosa* and *N. tabacum*. D. U. Gerstel. 219-223
MUNGER, FRANCIS: Reproduction and Mortality of California Red Scales Resistant and Nonresistant to Hydrocyanic Acid Gas, as Affected by Temperature---- 153-163
Myzus persicae—
  alate forms, production on *Brassica campestris* in greenhouse. W. A. Shands and G. W. Simpson---- 165-173
  injury to potatoes---- 165

Nicotiana glutinosa and *N. tabacum*, transfer of mosaic-resistance factor between H chromosomes. D. U. Gerstel---- 219-223
Nitrate-nitrogen content, soil of apple orchards---- 4-11
Nitrogen—
  applied to apple trees at different seasons, response of trees. J. R. Magness, L. P. Batjer, and L. O. Regeimbal---- 1-25
  content of apple tree parts at different seasons---- 11-18, 22-24
  effect on susceptibility of tomatoes to *Alternaria solani*. H. Rex Thomas---- 289-306
Nutrients, digestible, and metabolizable energy in Russian-thistle hays and silages. F. W. Christensen, T. H. Hopper, and O. A. Stevens---- 73-93

OZARD, W. E., PARKER, K. G., HAGMANN, LYLE E., COLLINS, DONALD L., TYLER, L. J., and DIETRICH, HENRY: The Association of *Hylurgopinus rufipes* with the Dutch Elm Disease Pathogen---- 175-183

PARKER, K. G., HAGMANN, LYLE E., COLLINS, DONALD L., TYLER, L. J., DIETRICH, HENRY, and OZARD, W. E.: The Association of *Hylurgopinus rufipes* with the Dutch Elm Disease Pathogen---- 175-183
Parthenium argentatum. *See* Guayule.
PATCH, L. H., and EVERLY, RAY T.: Contribution of Inbred Lines to the Resistance of Hybrid Dent Corn to Larvae of the Early Summer Generation of the European Corn Borer---- 257-263
Peach aphid, green. See *Myzus persicae*.
PETERSON, M. L., REITZ, L. P., GRANDFIELD, C. O., GOODDING, G. V., ARNESON, M. A., and HANSING, E. D.: Reaction of Alfalfa Varieties, Selections, and Hybrids to *Ascochyta imperfecta*---- 307-323
Phosphorus, effect on susceptibility of tomatoes to *Alternaria solani*. H. Rex Thomas---- 289-306
Pine, ponderosa—
  flagging injury caused by Prescott scale and associated organisms in Southwest. Howard L. McKenzie, L. S. Gill, and Don E. Ellis---- 33-51
  infestation, artificial, with *Matsucoccus vexillorum*---- 41-50
  twig flagging, effects---- 34-37
  twig flagging, histology---- 37-41

Page

Potassium, effect on susceptibility of tomatoes to *Alternaria solani*. H. Rex Thomas.. 289-306
Potato—
  hybrids, meiotic abnormalities---- 185-211
  See also *Solanum tuberosum*.
Potatoes—
  breeding for blight resistance---- 185-211
  Maine, *Myzus persicae* infestation, intermediate host---- 165-173
Prescott scale and associated organisms causing flagging injury to ponderosa pine in Southwest. Howard L. McKenzie, L. S. Gill, and Don E. Ellis---- 33-51

REGEIMBAL, L. O., MAGNESS, J. R., and BATJER, L. P.: Apple-Tree Response to Nitrogen Applied at Different Seasons---- 1-25
REITZ, L. P., GRANDFIELD, C. O., PETERSON, M. L., GOODDING, G. V., ARNESON, M. A., and HANSING, E. D.: Reaction of Alfalfa Varieties, Selections, and Hybrids to *Ascochyta imperfecta*---- 307-323
Rubber—
  formation in vitro, attempts with *Cryptostegia grandiflora*---- 125
  leaf, relation to whip latex rubber of *Cryptostegia grandiflora*---- 116-117
  See also Guayule.
Russian-thistle—
  feeds—
    apparent digestibility---- 81-82
    chemical composition and gross energy.. 78-79
  hays and silages, digestible nutrients and metabolizable energy in. F. W. Christensen, T. H. Hopper, and O. A. Stevens---- 73-93
  plant—
    chemical composition---- 74-76
    description---- 73-74
  rations—
    digestible nutrients---- 85-88
    metabolizable energy---- 83-85
Rutabaga, wild, host of alate forms of *Myzus persicae* in greenhouse---- 165-173

Salsola kali. *See* Russian-thistle.
Scale—
  California red—
    mortality, effect of temperature---- 157-162
    reproduction, effect of temperature.. 153-157
    resistant and nonresistant to hydrocyanic acid gas, reproduction and mortality, effects of temperature. Francis Munger---- 153-163
  Prescott, and associated organisms causing flagging injury to ponderosa pine in Southwest. Howard L. McKenzie, L. S. Gill, and Don E. Ellis---- 33-51
SCHNEIDER, HENRY: Susceptibility of Guayule to Verticillium Wilt and Influence of Soil Temperature and Moisture on Development of Infection---- 129-143
SCHNELL, LEONA O.: A Study of Meiosis in the Microsporocytes of Interspecific Hybrids of *Solanum demissum* × *Solanum tuberosum* Carried through Four Backcrosses---- 185-212
Scolytus multistriatus, carrier of Dutch elm disease pathogen---- 175, 181-182
Seeds passed through bovine digestive tract, recovery and viability. Glenn W. Burton and John S. Andrews---- 95-103
SHANDS, W. A., and SIMPSON, G. W.: The Production of Alate Forms of *Myzus persicae* on *Brassica campestris* in the Greenhouse---- 165-173
Shark meal—
  analysis---- 214-217
  composition. Sidney P. Marshall and George K. Davis---- 213-218
Sheep—
  calcium, phosphorus, and magnesium balances due to Russian-thistle feeding---- 88-90
  feeding Russian-thistle hays and silages.... 73-92
  nitrogen balances due to Russian-thistle feeding---- 82-83

Page

Silages, Russian-thistle, digestible nutrients and metabolizable energy in. F. W. Christensen, T. H. Hopper, and O. A. Stevens ... 73-93
SIMPSON, G. W., and SHANDS, W. A.: The Production of Alate Forms of *Myzus persicae* on *Brassica campestris* in the Greenhouse ... 165-173
SMITH, T. E., and CLAYTON, E. E.: Inheritance of Resistance to Bacterial Wilt in Tobacco ... 27-32
Soil—
in apple orchard, nitrate-nitrogen content ... 4-11
temperature and moisture, effect on development of verticillium wilt in guayule. Henry Schneider ... 129-143
Solanum—
demissum—
cytological phenomena and characteristic breeding behavior ... 188
× *S. tuberosum* hybrids, interspecific, carried through four backcrosses, meiosis in, microsporocytes of, study. Leona O. Schnell ... 185-212
hybrids, breeding behavior and cytology ... 192-207
tuberosum—
cytological phenomena and characteristic breeding behavior ... 188-192
×*S. demissum* hybrids, interspecific, carried through four backcrosses, meiosis in, microsporocytes of, study. Leona O. Schnell ... 185-212
See also Potato.
Sorghum—
varieties—
and ages, effect on biology of chinch bug. R. G. Dahms ... 271-288
tolerance to chinch bug infestation ... 279, 281
variety and age of plant, effect on—
chinch bug longevity ... 283-284
chinch bug oviposition ... 283
mortality of chinch bug nymphs ... 285
rate of chinch bug nymphal development ... 284-285
size of chinch bug adults ... 284
See also Sorgo.
Sorghums—
varietal susceptibility to chinch bug under field conditions, comparsion ... 273-274
variety, effect on—
chinch bug longevity ... 276
chinch bug nymph mortality ... 278-279
chinch bug oviposition ... 274-276
rate of chinch bug nymphal development ... 277-278
size of chinch bug adults ... 276-277
Sorgo—
domestic varieties, sucrose, dextrose, and levulose content at different stages of maturity. Emil K. Ventre, S. Byall, and J. L. Catlett ... 145-151
juices, analyses at different stages of maturity ... 147-150
Southwest, Prescott scale and associated organisms causing flagging injury to ponderosa pine. Howard L. McKenzie, L. S. Gill, and Don E. Ellis ... 33-51
STEVENS, O. A., CHRISTENSEN, F. W., and HOPPER, T. H.: Digestible Nutrients and Metabolizable Energy in Russian-Thistle Hays and Silages ... 73-93
STEWART, W. S., BONNER, J., and HUMMER, R. W.: Yield, Composition, and Other Latex Characteristics of *Cryptostegia grandiflora* ... 105-127

Page

Sucrose content, sorgo, domestic varieties, at different stages of maturity. Emil K. Ventre, S. Byall, and J. L. Catlett ... 145-151

THOMAS, H. REX: Effect of Nitrogen, Phosphorus, and Potassium on Susceptibility of Tomatoes to *Alternaria solani* ... 289-306
Tobacco—
breeding for resistance to—
bacterial wilt ... 27-32
mosaic ... 219-223
crosses, inheritance of resistance to bacterial wilt ... 30
flue-cured varieties, low wilt resistance, utilization ... 28-29
immunity to bacterial wilt, development ... 29, 31-32
inheritance of resistance to bacterial wilt. T. E. Smith and E. E. Clayton ... 27-32
parent, susceptible to bacterial wilt, relation to recovery of resistance ... 31
resistance to bacterial wilt, inheritance. T. E. Smith and E. E. Clayton ... 27-32
Samsoun, breeding for yield, translocation study ... 219-223
TOENJES, W., GARDNER, V. R.:
and GIEFEL, M.: Segregation in a Radially Unsymmetrical Sport of the Canada Red Apple ... 241-255
and GIEFEL, M.: Segregation in Russeted Sports of the Grimes Apple ... 225-229
GIEFEL, M., and KREMER, J. C.: Variability and Segregation in the Golden Russet Apple ... 231-240
Tomatoes, susceptibility to *Alternaria solani*, effect of nitrogen, phosphorus, and potassium. H. Rex Thomas ... 289-306
TYLER, L. J., PARKER, K. G., HAGMANN, LYLE E., COLLINS, DONALD L., DIETRICH, HENRY, and OZARD, W. E.: The Association of *Hylurgopinus rufipes* with the Dutch Elm Disease Pathogen ... 175-183

VENTRE, EMIL K., BYALL, S., and CATLETT, J. L: Sucrose, Dextrose, and Levulose Content of Some Domestic Varieties of Sorgo at Different Stages of Maturity ... 145-151
Verticillium—
albo-atrum, cause of verticillium wilt of guayule ... 129
wilt, susceptibility of guayule to and influence of soil temperature and moisture on development of infection. Henry Schneider ... 129-143

Wheat—
crosses—
breaking strength, variability and inheritance ... 63-66
characters, interrelation ... 67-68
contingency studies ... 68-69
inheritance of characters ... 53-71
morphological characters, variability ... 57
morphological characters, variability and inheritance ... 66-67
weight per unit length, variability and inheritance ... 57-63
Kanred × Coppei, inheritance of weight per unit length of culm and other characters. I. M. Atkins ... 53-72
Wilt, bacterial, resistance, inheritance in tobacco. T. E. Smith and E. E. Clayton ... 27-32